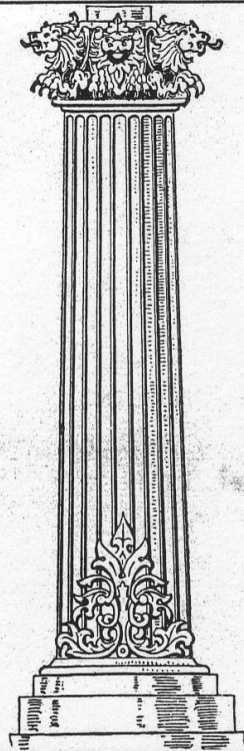


SWETT AND LEWIS  
COMPANY

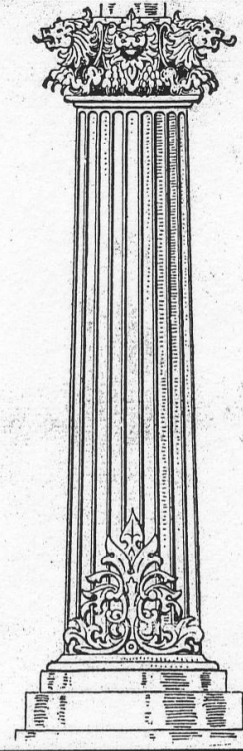
THE KINKRAIDE COIL

18 BOYLSTON STREET  
BOSTON

# SWETT AND LEWIS COMPANY



*BULLETIN  
NUMBER  
TWENTY-EIGHT*



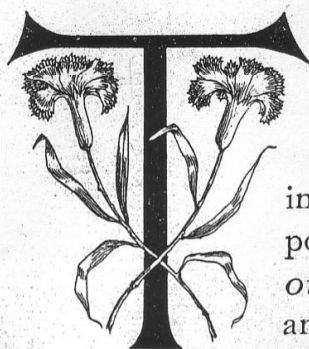
NUMBER EIGHTEEN BOYLSTON STREET  
BOSTON ❖❖❖ MASSACHUSETTS, U. S. A.



WE ARE PLEASED TO ANNOUNCE THAT WE ARE SOLE SELLING AGENTS FOR THE KINRAIDE COILS, WHICH, PREVIOUS TO JUNE, 1901, WERE NOT MADE ON AN EXTENDED SCALE, THE FEW BUILT IN THE LABORATORY OF THE INVENTOR, MR. THOMAS B. KINRAIDE, OF JAMAICA PLAIN, MASSACHUSETTS, HAVING WON UNSTINTED PRAISE. MR. HOWARD JACKSON, THE WELL-KNOWN ELECTRICAL ENGINEER, WHO HAS MANUFACTURED OUR GOODS FOR SEVERAL YEARS, HAS SECURED THE SOLE LICENSE TO MANUFACTURE UNDER MR. KINRAIDE'S PATENTS

# THE KINRAIDE INDUCTION COIL

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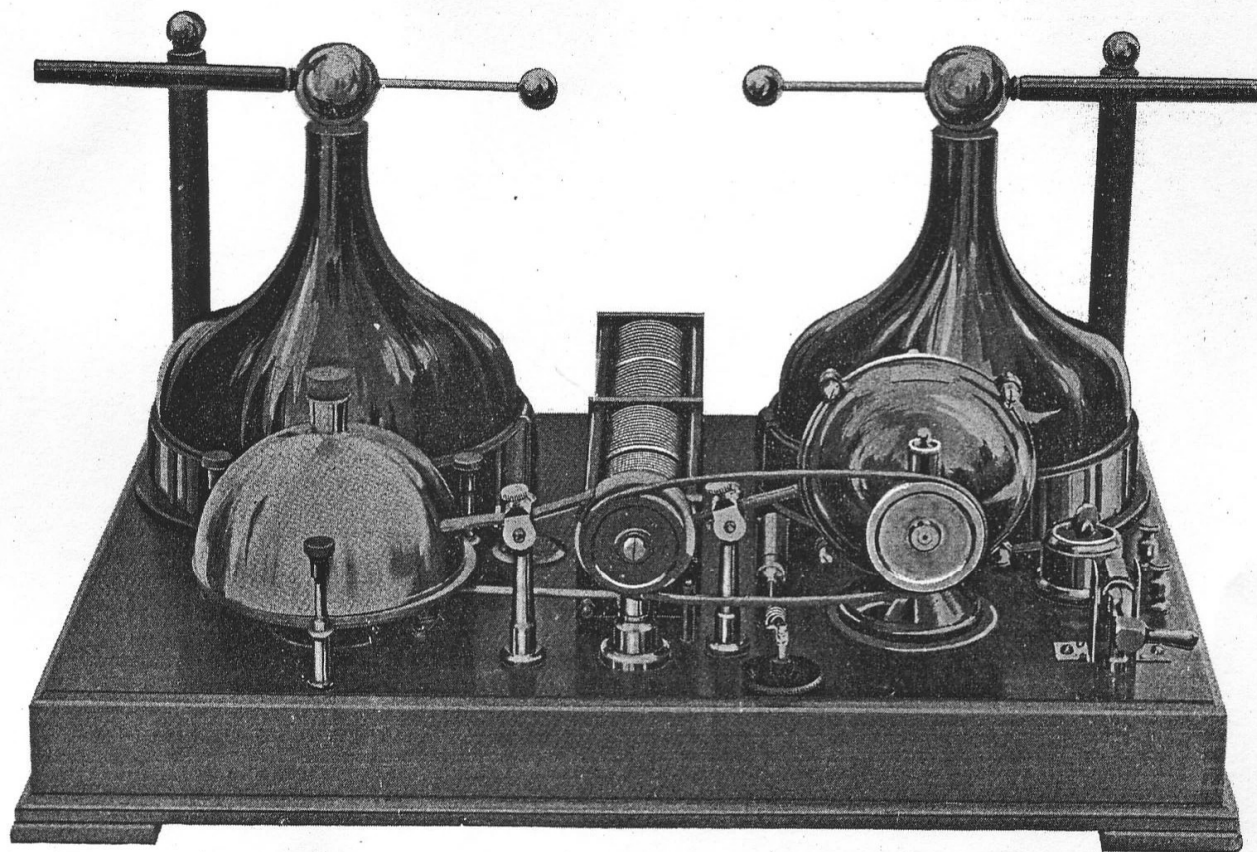
THE Rhumkorff Coil, with its many miles of fine wire wound in thin sections, a hundred or more of which are necessary for a twelve-inch spark coil, is the starting point from which the Kinraide Induction Coil was developed. This coil consists of two separate secondaries with their primaries connected in series. Each secondary has a high and low potential terminal due to the position and the method of winding the primary. The primary is located *outside* the secondary winding. The secondaries are wound in single flat discs and lie in the same plane as the primaries; with this method of construction the discharge from the two terminals is vastly different. The potential at the central terminal of the secondary is extremely high, while that of the outer turns near the primary is very low. By connecting the outer terminals of two such secondaries in series the potential of the outer turns entirely disappears.

## A UNIQUE FEATURE

This unique feature is of the utmost importance, as there is no tendency to discharge into the primary, a most deplorable weakness of the Rhumkorff Coil, and most expensive, since, if the primary tube is punctured, the coil is practically ruined. The secondary of the Kinraide Coil is not subject to any such danger.

Another weak feature of the Rhumkorff Coil is the heat developed in the primary. Outside the wall of the primary tube, and in contact with it, is the insulating compound. The least increase of temperature in the primary softens this, and before danger is suspected, it has melted, and no safe operation can thereafter be assured.





THE KINRAIDE HIGH FREQUENCY COIL, DIRECT CURRENT

## SWEET AND LEWIS COMPANY

### ABSENCE OF HEAT

There is absolutely no heating in the primary of the Kinraide Coil, so that the insulation cannot be melted, nor is there heat generated where it can in any way affect this delicate part of the apparatus.

In the above, the Rhumkorff Coil is used for comparison only, and not to depreciate its value, after long years of service as an inseparable part of a well-equipped laboratory.

### SPARK GAP

### HIGH FREQUENCY

A most valuable feature is the water cooled spark gap. The heat ordinarily developed in various parts of other coils is localized here, where it can be taken care of without trouble or risk. In other coils there is a single discharge from every interruption of the primary circuit. With this spark gap we have a high frequency apparatus giving many hundred discharges, or surgings, in the secondary for every break or reversal in the primary.

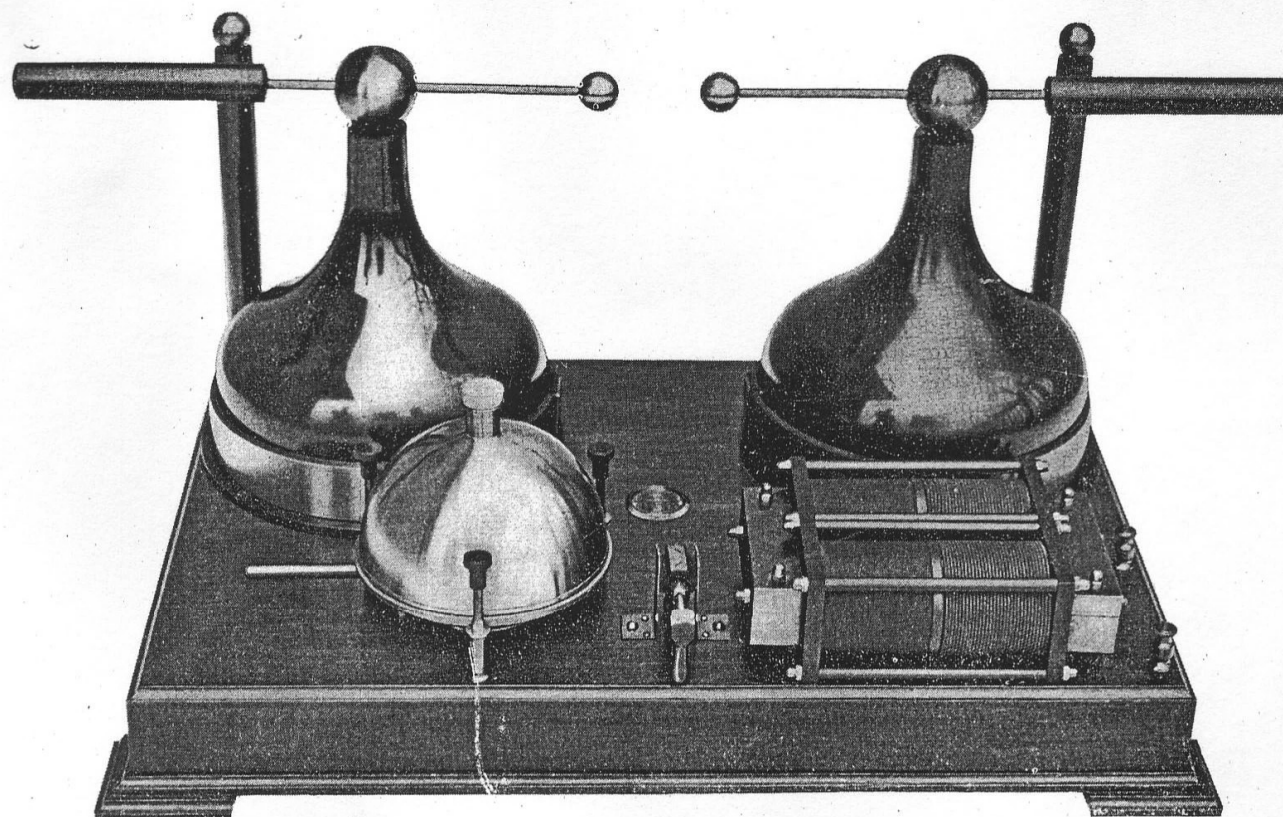
### DISCHARGE

This diminishes the time of exposure and increases the steadiness of the illumination of the screen. The appearance of the discharge is wholly different from the Rhumkorff spark, and must be seen to be appreciated.

### IMPROVED INTERRUPTER

A vexatious feature of the old apparatus was the constant attention required by the vibrator. The sticking of the platinum points and the cost of their renewal





THE KINRAIDE HIGH FREQUENCY COIL, ALTERNATING CURRENT

## SWETT AND LEWIS COMPANY

is entirely eliminated by the new rotary break, which will easily handle sufficient current without noticeable sparking.

### DURABILITY

This interrupter is a most solid and durable thing, and with the spark gap, embodies an entirely new principle. It is as durable as any part of the coil; and when started runs at constant speed until the motor is stopped. The alternating coil requires no interrupter. The spark gap, however, is essential.

### PORTABILITY

#### LIGHT WEIGHT

The use of so little wire in the coil makes the apparatus compact, strong and readily portable. The whole outfit may be taken in the physician's buggy. In hospitals it may be placed upon a small table, and moved from ward to ward. The weight of the coil complete is from sixty-five to seventy-five pounds.

### SMALL AMOUNT OF CURRENT USED

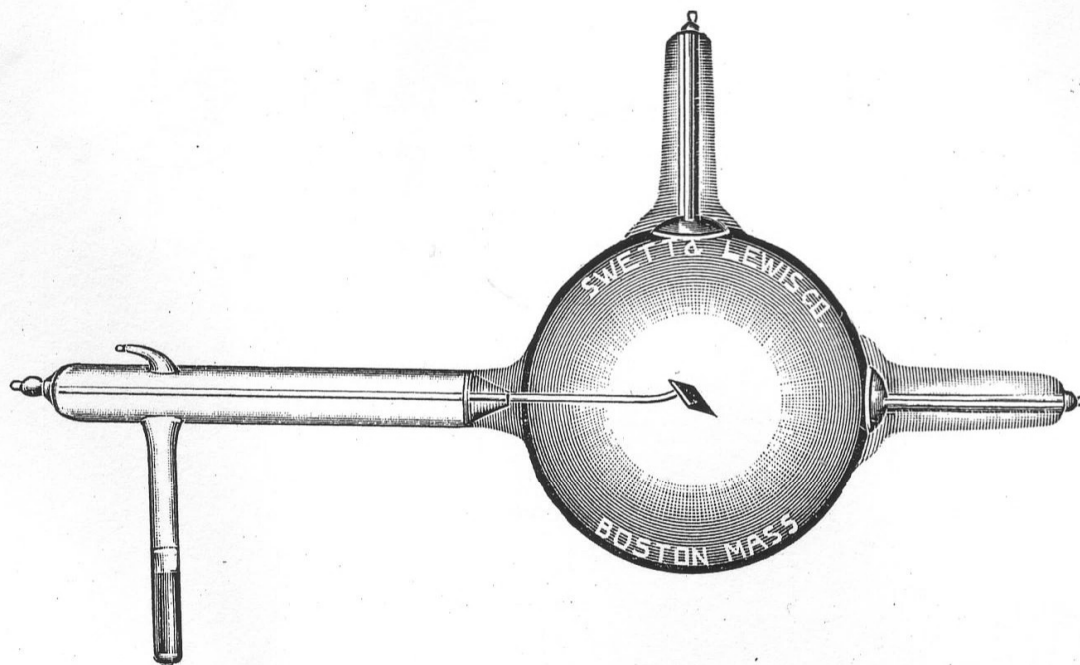
This apparatus consumes about two hundred watts, costing from two to four cents per hour at the average price of electricity. It may be attached to any incandescent lamp socket, either direct or alternating current.

### SHORT EXPOSURES

#### SUCCESSFUL TESTS

For X-ray fluoroscopic work great steadiness of illumination is necessary; also energy enough to brilliantly illuminate the screen. For radiographs it is essential





TYPE H FOR ALTERNATING CURRENT USE



EXPOSURE that the time of exposure should not be long; in fact, a great amount of detail in the finished negative is often sacrificed on account of difficulties attending a prolonged exposure. All these valuable effects are obtainable in this new apparatus, which has been put to most severe tests in both private and hospital work for the past three years, and is highly recommended by the users.

The following table of exposures will be found to meet the requirements in the average case, with a normal distance and a plate of the ordinary speed.

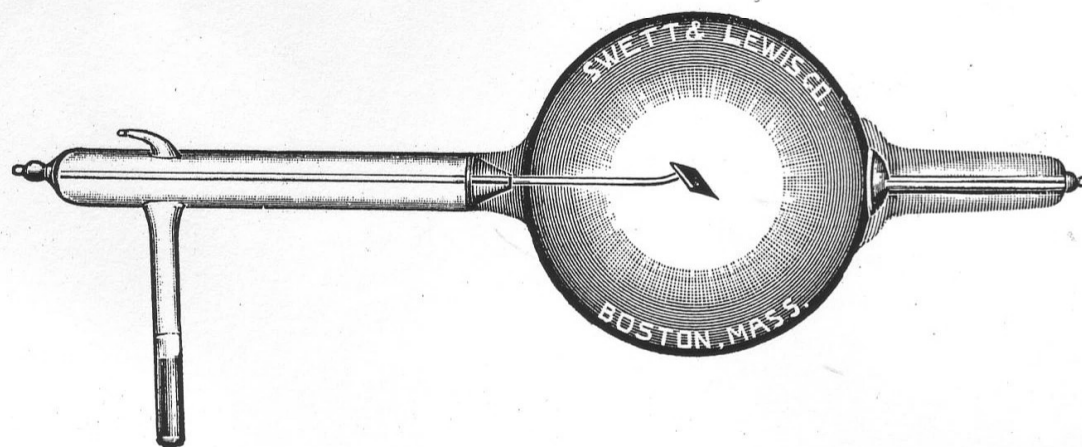
#### FOR ADULTS

Chest . . . . .	2 minutes	Pelvis . . . . .	2½ minutes
Shoulder . . . . .	2 minutes	Hip . . . . .	2½ minutes
Elbow . . . . .	15 seconds	Knee . . . . .	60 seconds
Wrist . . . . .	5 seconds	Ankle . . . . .	15 seconds
Hand . . . . .	3 seconds	Foot . . . . .	5 seconds

#### SUMMARY OF ADVANTAGES

RELIABILITY A summary of the advantages of the Kinraide Coil are portability, safety of operation, simplicity of construction, durability, small amount of current used in operating, steadiness of illumination of fluorescent screen, a greater amount of X-ray light than from any other apparatus, always ready for work in all weathers, no sparking into the primary, no melting of the solid insulation of the secondary, easily and cheaply repaired, no platinum points, no breaking down of the condenser, a much shorter time of exposure than has been before obtained, and it cannot be burned out.





TYPE K FOR DIRECT CURRENT USE

## SWETT AND LEWIS COMPANY

### REGULATION AND CONTROL

The Kinraide Coil and the tubes designed for it are built to stand the full current from the street mains. Experience, however, has shown that a regulating device is required for the best work.

#### SPECIAL RHEOSTAT

For this purpose a special rheostat is inserted in the primary circuit, and this, together with the vacuum regulating device attached to the tube and stand, enables the operator to regulate the coil and tube to a nicety.

In the field of therapeutics a rheostat is an absolute necessity, as the full current from the coil can be borne by but few patients. By its use the dosage may be regulated from one so light as to be almost imperceptible, to one so strong as to produce the most severe effects.

### TUBES

Our tube, at first sight, is not different from the ordinary X-ray tube. It is, however, carefully constructed upon accurate measurements made from, and according to the requirements of this coil. The curvature and size of the cathode, its distance from the anode, and the proper vacuum have all been experimentally determined and incorporated into its structure. The alternating current tube is a new departure, is the outcome of years of experimentation, and is unequalled for definition. For best results our tubes should always be used with these coils.





VACUUM  
ADJUSTER

Too much stress cannot be laid upon the necessity of having a suitable tube, as therein lies the secret of the best work. All of our tubes for coil use are fitted with our special vacuum adjuster, by which the vacuum can be held at any point with ease. It has been a difficult problem to successfully design a tube to resist the energy developed by the Kinraide Coil, many methods having been tried with varying success.

HEATING  
CONTROLLED

Cold water is not a desirable element to introduce into a tube while in operation; neither is the use of masses of base metal to take up the heat advisable, on account of the gases given off, which change the vacuum. We believe the proper method is to use extremely thick platinum, the avoidance of which has heretofore been the object of many manufacturers. We have found that this is the surest and best method to accomplish the end sought.

ANODES

The anodes on this type tube will become red or almost white hot if the entire current of the coil be used. This does no harm as the platinum is of the hardest variety known and is supported on a steel rod, which will not bend or become displaced.

ECONOMY

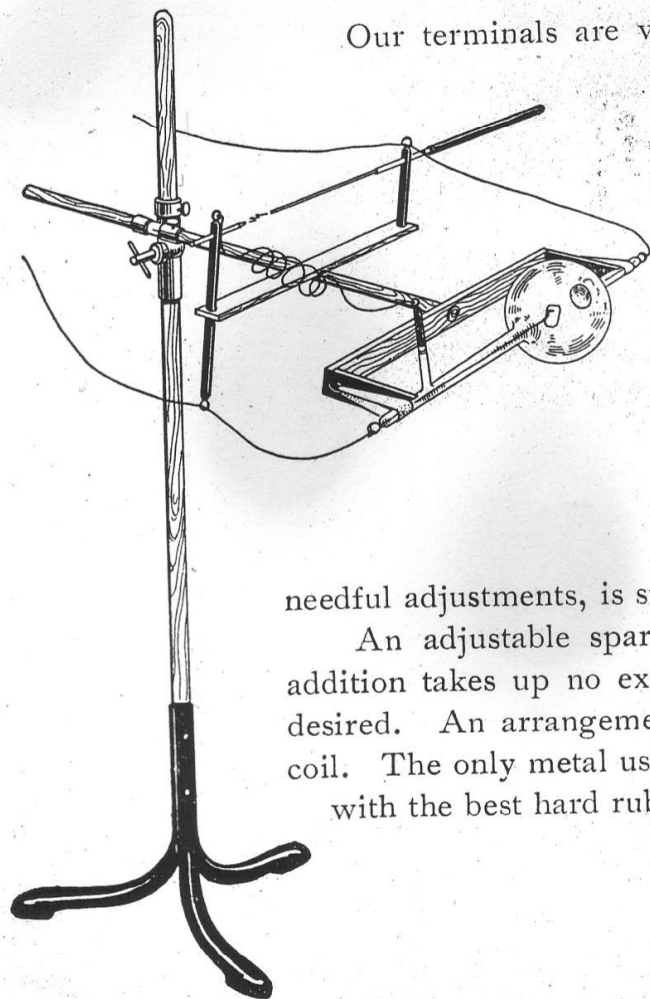
Our tubes are run successfully by the most powerful generators with no trouble from varying vacuum, and experience has proved their use is economical. They are readily repaired, an advantage not possessed by the complicated varieties, and by no means an unimportant consideration. All our tubes are *hand made* from the best German glass, and are carefully annealed and exhausted to just that nice point which gives the best results.

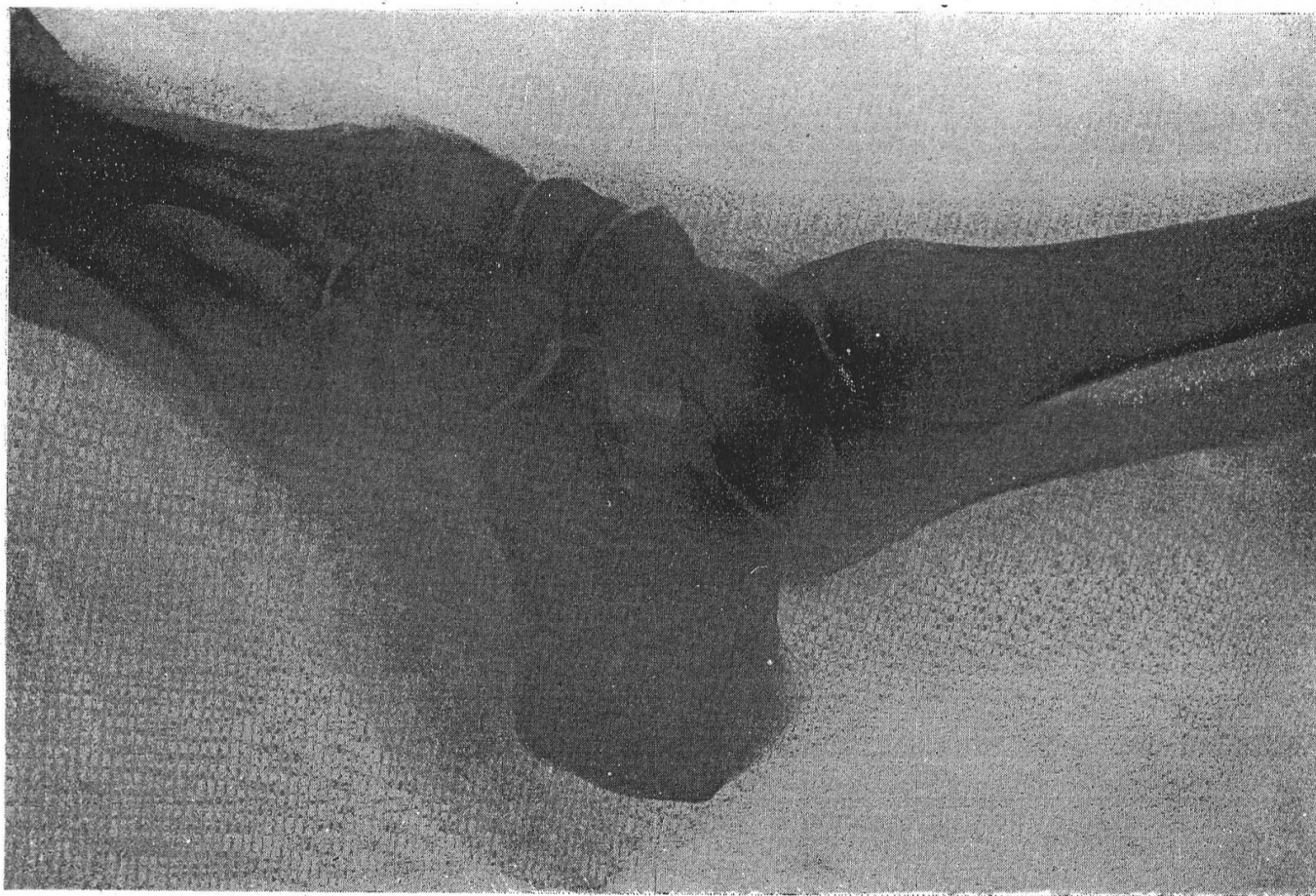
Our terminals are worthy of commendation. We are proud of the mechanical design of our tubes, and extended use shows that they have ample strength exactly where needed. In short, our aim has been to avoid complications of all kinds, and the accompanying cuts show how well we have succeeded.

## TUBE STANDS

Our experience has shown us that the present tube-holders on the market leave much to be desired for practical every-day work. After much experimenting we have produced a floor stand that is not complicated, has all needful adjustments, is sufficiently rigid, and looks well.

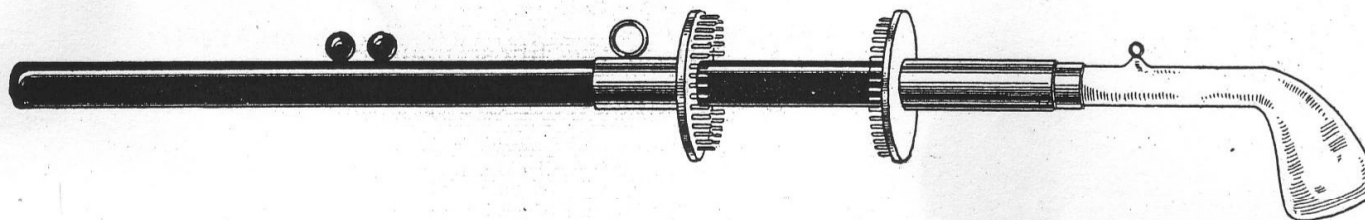
An adjustable spark gap for tube regulations is a valuable feature, and this addition takes up no extra space. By its use the vacuum may be held at any point desired. An arrangement of this sort is a necessity and should be ordered with each coil. The only metal used is the cast iron base. The tubes and wires are well insulated with the best hard rubber, thus increasing the efficiency of the whole apparatus.





FIFTEEN SECONDS EXPOSURE





CODE WORD, KRAENZLER

## DR. STRONG'S REGULATING HANDLE

The above handle was devised by Dr. Frederick Strong, of this city, and used by him as a means of regulating the dosage delivered by the various forms of vacuum electrodes.

### DISCHARGE

With the plates widely separated, there is little, if any, effect perceptible by the patient, but by bringing them nearer together a beautiful blue discharge takes place, and the amount of current is gradually increased.

The various forms of electrodes illustrated on pages 19 and 21, but without handles and with special base, may be used with this handle.

Price of Handle complete with one No. 14 Electrode, . . . . .	\$15.00
Extra Electrodes, each . . . . .	4.00



## PRICE LIST

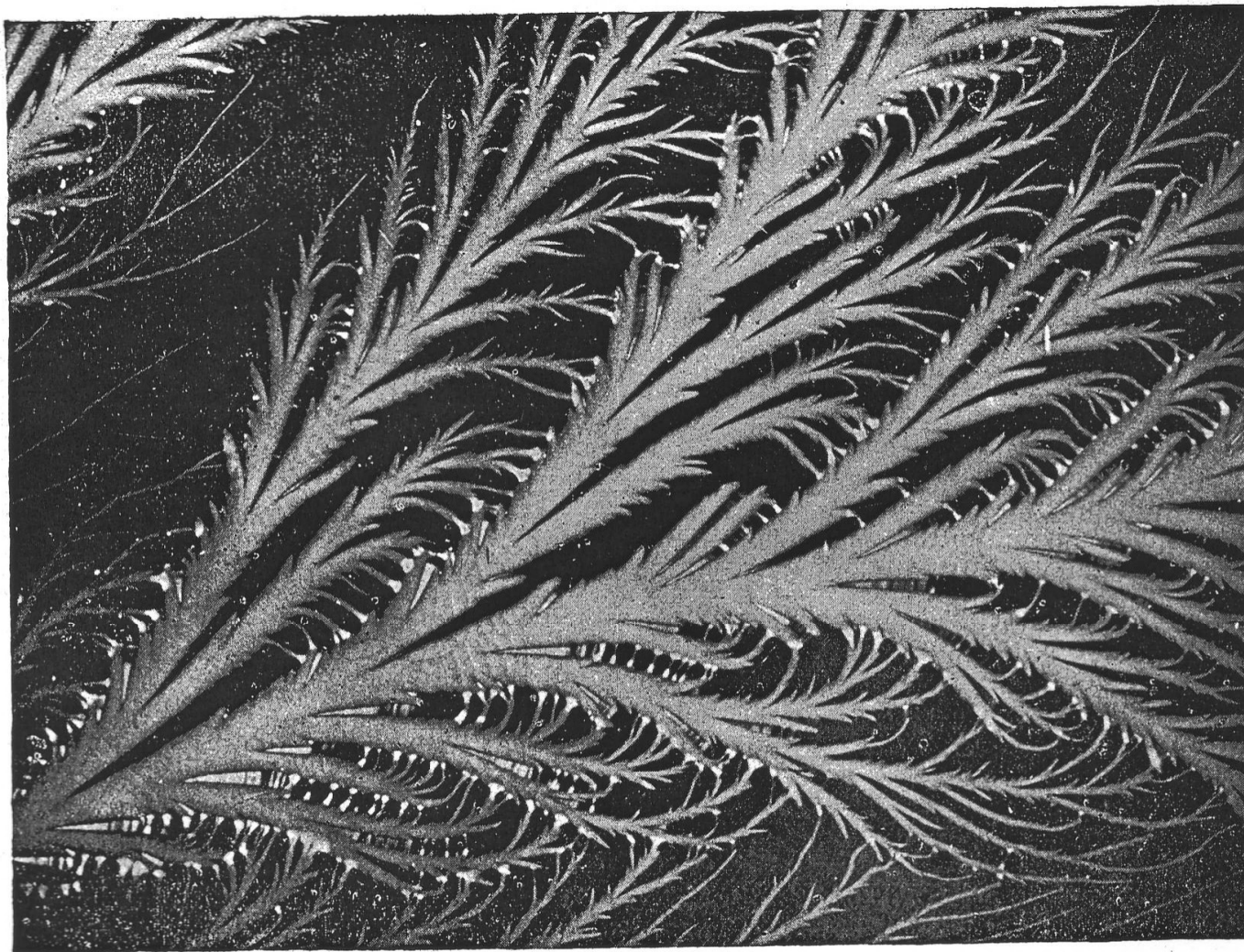
This apparatus is constructed from the finest materials and finished in the best possible manner. No second grade is made.

COILS	The Kinraide Induction Coil . . . . .		\$200.00
	(Direct and alternating currents of all voltages from 20 to 250)		
	500-Volt Coils, extra . . . . .		20.00
CODE WORDS	52 volts, 7,200 Alternations, Koperig	110 volts, Direct Current, Intardatum	
	110 volts, 7,200 Alternations, Koperkies	220 volts, Direct Current, Intardetis	
	52 volts, 16,000 Alternations, Koperkleur	235 volts, Direct Current, Intarlando	
	110 volts, 16,000 Alternations, Kopermolen	250 volts, Direct Current, Intarlare	
	110 volts, 15,000 Alternations, Kopermunt	500 volts, Direct Current, Intarlato	
TUBES	K Tube for Direct Current Coil (Code Word, Delustro) . . . . .		\$15.00
	H Tube for Alternating Current Coil only (Code Word, Delusively) . . . . .		18.00
	Insulating Cords for Connecting Tubes, per set . . . . .		1.00

An allowance of \$3.00 towards the price of new apparatus will be made for the return of the complete terminals of either of the above tubes.

## FLUOROSCOPES

Platinum Barium Cyanide Fluoroscope, 4 x 5 (Code Word, Eapse) . . . . .	\$ 8.00
Platinum Barium Cyanide Fluoroscope, 5 x 5 (Code Word, Earinus) . . . . .	10.00
Platinum Barium Cyanide Fluoroscope, 5 x 7 (Code Word, Earshrift) . . . . .	12.50
Platinum Barium Cyanide Fluoroscope, 6 x 6 (Code Word, Earthiness) . . . . .	13.00
Platinum Barium Cyanide Fluoroscope, 6 x 8 (Code Word, Earthling) . . . . .	16.00
Platinum Barium Cyanide Fluoroscope, 8 x 10 (Code Word, Earthly) . . . . .	24.00



POSITIVE DISCHARGE FROM KINRAIDE COIL (REDUCED)



# SWETT AND LEWIS COMPANY

## QUALITY

The Platinum Barium Cyanide from which these screens are manufactured is crystalized and re-crystalized before the cardboard is coated ; afterwards a protecting varnish is applied, which makes them, in our opinion, the best screens in the country today. These screens are brilliant and lasting, and of very fine grain.

Tungstate of calcium screens will be furnished if desired. These are much cheaper, but we do not recommend them for ordinary work. Price list on application.

## X-RAY PLATES

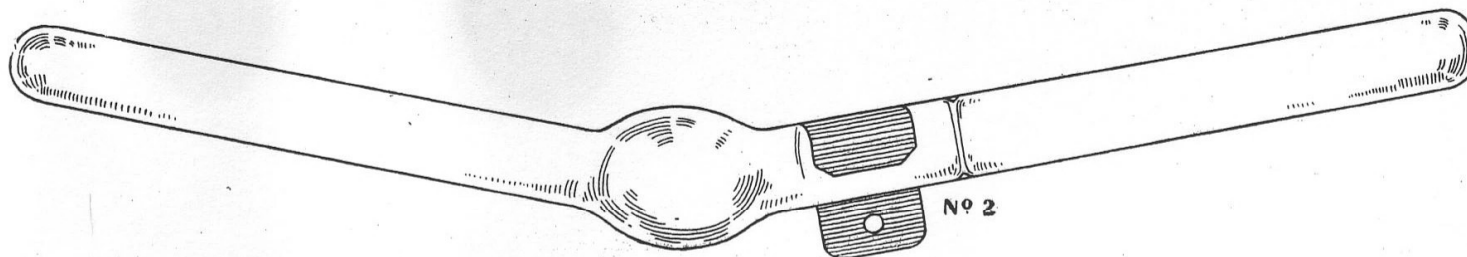
5 x 7, per dozen . . . . .	\$1.40
6½ x 8½, per dozen . . . . .	2.30
8 x 10, per dozen . . . . .	3.40
10 x 12, per dozen . . . . .	5.50
11 x 14, per dozen . . . . .	7.00
Complete developing and printing outfit, with full instructions for use . . . . .	5.00

A supply of the above sizes always in stock. These plates are specially wrapped in light proof paper, no plate holder being required for use with the X-ray.

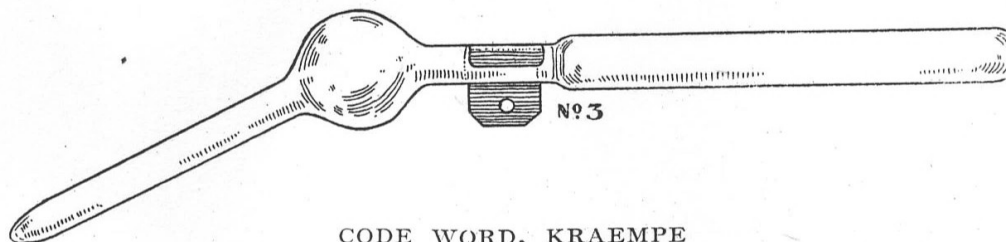
## FLOOR TUBE STAND

Floor Tube-Stand, with Adjustable Spark Gap (Code word, Finados) . . . . .	\$10.00
A Finely Polished Quartered Oak Table large enough for either of the foregoing outfits, and equipped with ball bearing castors (Code word, Firmandos) . . . . .	12.00
Rheostat . . . . .	8.00

# HIGH FREQUENCY ELECTRODES



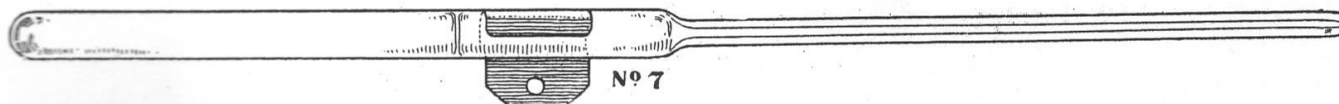
CODE WORD, KRAEMPELN



CODE WORD, KRAEMPE



CODE WORD, KRAENKER



CODE WORD, KRAENKLICH



## ELECTRODES FOR HIGH FREQUENCY WORK

No. 14	Vacuum Electrode, for general application . . . . .	\$4.00
No. 2	Vacuum Electrode, for vaginal application . . . . .	4.00
No. 3	Vacuum Electrode, for rectal application . . . . .	4.00
No. 11	Vacuum Electrode, for vaginal application, with cuped end . . . . .	4.00
No. 5	Vacuum Electrode, for urethral application, with curved end . . . . .	4.00
No. 7	Vacuum Electrode, for urethral application, straight . . . . .	4.00
No. 15	Vacuum Electrode, for eye application . . . . .	4.00
Nos. 17 and 18	Two Geissler Vacuum Electrodes, highly colored for giving general tonic treatment . . . . .	4.00
	One pair Metal Handles and Cords . . . . .	1.00
	Special Electrodes for any purpose and of any shape made to order; price on application	
	Set of eight Electrodes, Metal Handles and Cords . . . . .	25.00

## SAMPLE OUTFITS

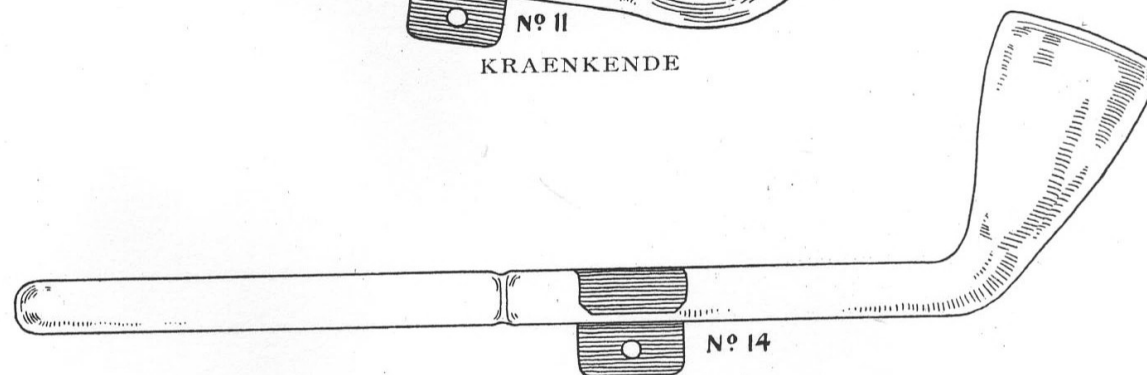
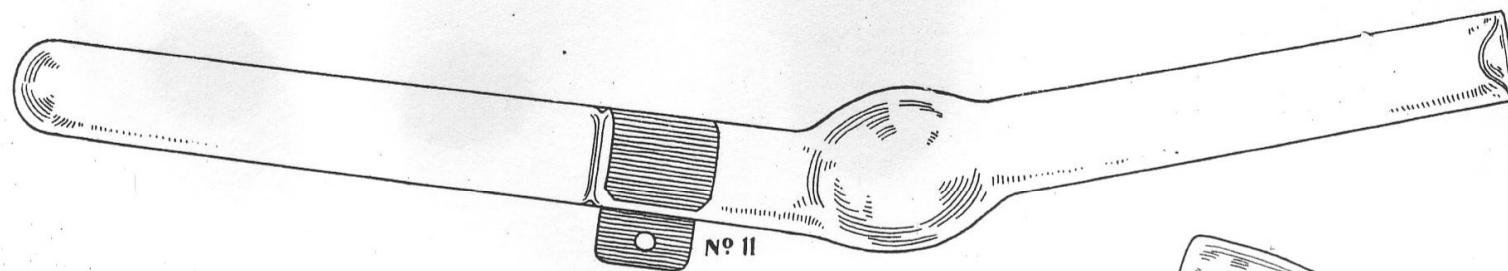
### OUTFIT NUMBER TWENTY-ONE (Code Word, Unproposed)

#### FOR DIRECT CURRENT—

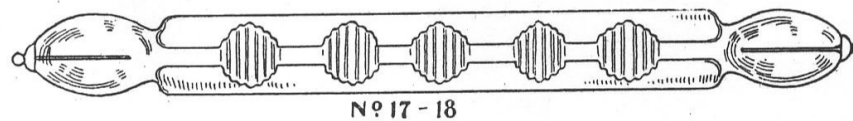
One (1) Direct Current Kinraide Coil . . . . .	\$200.00	
Two (2) Tubes, Type K . . . . .	30.00	
One (1) 5 x 7 Platinum Barium Cyanide Fluoroscope . . . . .	12.50	
One (1) Floor Tube Stand, with adjustable Spark Gap for controlling vacuum	<u>10.00</u>	\$252.50



# HIGH FREQUENCY ELECTRODES



No. 15. CODE WORD, KRAENKUNG



CODE WORD, KRAENZCHEN  
CODE WORD FOR SET, KRAENZEN

# SWETT AND LEWIS COMPANY

## OUTFIT NUMBER TWENTY-TWO (Code Word, Vestiaires)

### FOR ALTERNATING CURRENT—

One (1) Alternating Current Kinraide Coil . . . . .	\$200.00	
Two (2) Tubes, Type H . . . . .	36.00	
One (1) 5 x 7 Platinum Barium Cyanide Fluoroscope . . . . .	12.50	
One (1) Floor Tube Stand, with adjustable Spark Gap for controlling vacuum . . . . .	10.00	
		\$258.50
A rheostat for regulation is recommended for use with either of the above outfits.		

## OUTFIT NUMBER TWENTY-THREE (Code Word, Unprovide)

### FOR DIRECT CURRENT—

One (1) Direct Current Kinraide Coil . . . . .	\$200.00	
Two (2) Tubes, Type K . . . . .	30.00	
One (1) 6 x 8 Platinum Barium Cyanide Fluoroscope . . . . .	16.00	
One (1) Floor Tube Stand . . . . .	10.00	
One (1) Rheostat . . . . .	8.00	
One (1) Quartered Oak Table . . . . .	12.00	
One (1) Set of Three Electrodes, Nos. 14, 17 and 18 . . . . .	8.00	
		\$284.00

## OUTFIT NUMBER TWENTY-FOUR (Code Word, Vestiairo)

### FOR ALTERNATING CURRENT—

One (1) Alternating Current Kinraide Coil . . . . .	\$200.00	
Two (2) Tubes, Type H . . . . .	36.00	
One (1) 6 x 8 Platinum Barium Cyanide Fluoroscope . . . . .	16.00	
One (1) Floor Tube Stand . . . . .	10.00	
One (1) Rheostat . . . . .	8.00	
One (1) Quartered Oak Table . . . . .	12.00	
One (1) Set of Three Electrodes, Nos. 14, 17 and 18 . . . . .	8.00	
		\$290.00

## SWETT AND LEWIS COMPANY

In ordering coils give *voltage of circuit, whether direct or alternating; if alternating, the number of alternations.*

Full directions for operating accompany each coil.

We want our customers to feel perfectly free at all times to call upon us for expert advice on all things pertaining to the operation of X-ray outfits.

The factory where our goods are manufactured is well equipped with the finest tools and latest facilities for our business.

CATALOGUES      If interested in static machines and electro-therapeutical apparatus in general send for Bulletin Number Twenty-Four. Static tubes, Bulletin Number Twenty-Five.

SUPERIORITY      In therapeutics it is generally conceded that the Kinraide Coil is superior to all other apparatus in as much as the current may be used to excite the various high frequency electrodes for both internal and external uses. Pictures of a few of the various forms of electrodes will be found on preceding pages.

THERAPEUTICS      For treating cancer, lupus, the various forms of skin diseases and the removal of superfluous hair, the coil and X-ray tube have a very broad field. The numerous forms of regulation, the reliability and the great quantity of X-rays generated, make the apparatus a most necessary part of a well-equipped office.

Coils in general and the Kinraide Coil in particular are conceded by those best posted in this sort of work to excel all other instruments.





## TERMS

Prices in this catalogue are net.

Remit by money order, express or by New York draft. Add twenty-five cents to face of all checks, except on New York or Boston, to cover collection charges.

REFERENCES Customers unknown to us must give satisfactory references, or send draft with order, for which we will allow five per cent. discount. We will ship C. O. D., provided a remittance of twenty per cent. accompanies order. Charges for return of money to be borne by purchaser.

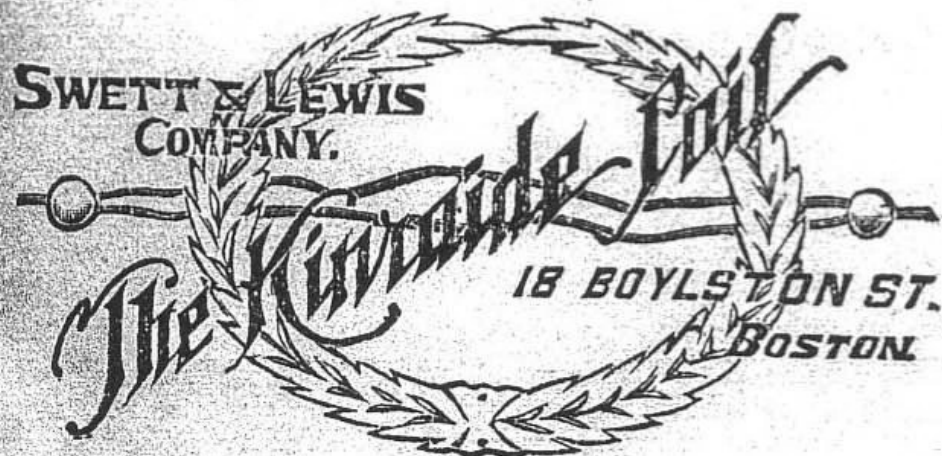
Goods will be delivered f. o. b., freight or express, Boston, Mass. No charge for packing. Each piece of apparatus is carefully packed and no allowance will be made for loss or breakage in transit.

Western Union Telegraph code used. Telegraph and cable address, "Swettxray."



## BLOCK TIN For X-Ray Therapy. Per pound, 75 Cents

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This material is specially rolled for us and is of the proper thickness for use in treating cancer, lupus and all diseases where the X-Ray is used. It is much lighter than lead, is as flexible, and remains clear and bright.